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ORIGINAL ARTICLES.

TROPHIC ULCER OF THE CORNEA DUE TO FRACTURE OF THE JAW.

(Clinical Note of a Case.)

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Trophic ulcers of the cornea are by no means sufficiently uncommon to justify an essay as to their immediate cause, since the influence of the fifth nerve in their ætiology is definite, and a matter of ancient history. But the several causes that lead up to the disturbance of the fifth nerve are not quite so constant and certain, so that from time to time conditions are encountered that have a relationship to this nerve, that previously were not considered to be any factor, whatsoever, in the production of trophic corneal ulcers.

The case in this report illustrates this very well. A young male adult Italian, a sailor by occupation, in the course of the festivities that attend pay day in the region of the Port Richmond coal wharves in Philadelphia, succeeded in having his upper and lower jaws on the left side broken and the base of his skull fractured.

He was admitted into the Episcopal Hospital surgical service through the receiving ward and treated for the surgical conditions mentioned. It was observed at the time of his admission that there was slight smoothness of the left side of the face. The motor functions, however, were but partially disturbed. Sensation was slightly impaired over the left forehead.

The original injury was sustained January 13, 1915, and on January 29, 1915, it was observed that a trophic keratitis had supervened which was complicated by the occurrence of an iritis by February 15, 1915. About this time he was observed by Dr. Frederick Krauss and myself, and the condition presented the appearance of sloughing of the cornea of the left eye. Almost the entire cornea, especially below, with the exception of a very small ring of fairly clear cornea near the periphery, and above, was densely opaque and infiltrated. It was anæsthetic. The corneal epithelium was wrinkled and vesiculated. Small bullæ could be demonstrated but desquamation was very slight. Fluorescin did not stain as would be anticipated from the first glance at the condition.

Anæsthesia of the left cornea and conjunctiva were demonstrated as well as pronounced impairment of sensation over the distribution of the terminal branches of the fifth nerve. This area extended above to one inch above the brow, to the right to the median line of the nose, below to two inches below the lower eyelid, and to the left to one-half inch beyond the external canthus of the left eye. There were no muscle-palsies. The entire globe as well as the conjunctiva and cornea were anæsthetic.

Under atropin, holocain, and protective bandage the condition of the eye improved, but shortly the patient passed without our observation. He returned after an interval of a few months and this time the left eye showed slight tarsal and ciliary injection converging towards the upper third of the cornea. The lower part of the cornea was infiltrated and still anæsthetic. The dense area appeared to be clearing. The cornea was thinning out and appeared to be protruding. The vision in the good eye was 5/6, but in the impaired eye (the left) was the perception of movement of fingers in the upper part of the field at four inches. In the course of his wandering from one hospital to another he found some one who found sufficient indication to warrant an iridectomy on the left eye. The advisability of incising a cornea the nutrition of which is questionable when its trophic influences are in abeyance, opens up a wide field for discussion. The point of greatest interest to us, however, is the fact that the incarceration of the fifth nerve in the callus thrown out in the course of the union of fragments in the case of fracture of the bones of the skull, must always be remembered in the occurrence of trophic ulcers as a possible factor of ætiologic importance.

OCULAR STUDY OF A CASE OF LEONTIASIS OSSEA, WITH A SYNOPSIS OF REPORTED CASES SHOWING INVOLVEMENT OF THE EYES AND ADNEXA.

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Abnormal thickening of the bones of the face and cranium was observed and discussed by early medical writers. The condition was designated "cranio-sclerosis" by Malphighi (1697), and descriptions of skulls presenting clear evidence of the disease are found in medical literature of the 18th and early 19th century. We are indebted to Virchow for the first adequate description of the anatomical changes and for the highly descriptive name "leontiasis ossea", which vividly suggests the leonine facial aspect of the victims of this disease. He recognized two principal forms: (a) Leontiasis ossea diffusa, or general hyperostosis of the cranium, and (b) localized hyperostosis, in which the bony enlargements appear in the form of rounded bosses of varying size, springing from the bones of the face and cranium.

General hyperostosis is an exceedingly rare condition and mere mention of its existence will suffice for our present purpose. The localized type, to which the case to be described conforms, varies exceedingly as to the extent and site of the bony involvement. In the milder cases, the enlargements may be small and inconspicuously situated, e.g., concealed by the hair. The more usual type presents bilateral bony tumors of the face and cranium and even of the lower jaw, so that the whole facial appearance is altered and all comeliness destroyed. This alteration of the physiognomy (for the worse) is well illustrated by cases in which the disease has begun in early adult life. Comparing photographs taken prior to the onset of the disease with those taken after its full development one is able to see what gross facial disfigurement may supervene. In the most marked example the deformity is hideous in the extreme, leading the unfortunate victims to seek surgical intervention solely in the hope of making themselves less repulsive.

The disease begins, as a rule, in childhood or early adult life. Generally speaking, it is progressive, although there may be long periods in which no appreciable change can be discerned. The sexes are about equally represented. The course is "always

a very long one and the prognosis is unfavorable." (Church and Petersen.)

The symptoms are variable. Headache of varying intensity occurs in fully one-half of the cases. This may be due to disease of the bone, or, in cases associated with optic neuritis, to increased intracranial pressure. Drowsiness, neuralgia, epileptic attacks, deafness, blindness, and gradual mental deterioration are the signs of bony encroachment on the brain and cranial nerves.

The disease should interest ophthalmologists and oto-laryngologists for the reason that the eyes, ears and nose are frequently compromised. A gradually increasing deafness is very common. In many cases the bony masses have completely occluded the nasal passages and surgical intervention has become necessary for the purpose of re-establishing nasal respiration. The globes are not only pushed forward, but are widely separated laterally so that, in the extreme cases, the visual axes diverge.

The disease is a rare one. The number of reported cases of unquestioned authenticity certainly does not exceed fifty. Lengthy papers dealing exhaustively with every aspect of the disease, with a resumé of cases, have been published by Putnam, Millat, Baumgarten, Bockenheimer and others. A few papers have appeared in ophthalmic literature (Ellis, Lagleyze, Sattler, etc.), but these have been simply case reports with more or less extended comments. It has seemed worth while, therefore, to collate all cases of leontiasis ossea in which the eyes or adnexa have been compromised in order to secure a complete picture of the ocular complications, and to suggest measures for relief.

Differential Diagnosis.—The diagnosis in a fully developed case is easy. Early cases have been confused with akromegaly, but the absence of involvement of the hands and feet and of changes in the sella turcica are points to be noted.

Simple osteomata and sarcomata should be readily distinguished. The distinction between leontiasis and Paget's disease (osteitis deformans) is not always clear. Indeed there are some authors, notably Prince[1] and Boit,[2] who stoutly assert the essential identity of the two.

Ætiology.—It is impossible at the present time to state that any one ætiological factor is operative in all cases. That trauma may be a contributary, if not a basic cause, is pretty well proved

1. Prince. Am. Jour. Med. Sciences, November, 1902.
2. Boit. Arch. f. Klin. Chirurg., 1912, XCVII, 515-573.

by the appearance in some cases of the first bony boss shortly after and at the precise site of injury. Erysipelas and other infective processes of the soft tissues have in some instances seemed to bear a causative relation. Dacryocystitis, when present, is probably secondary to the bone disease. Chronic inflammatory changes in the nose and sinuses may have some influence. There seems no good reason to suppose that the pituitary body bears any relation to this disease. There is wide divergence of opinion as to the role of syphilis, if any. Poisson insisted that leontiasis is a trophic disease, of neuropathic origin. Virchow attributed it to periostitis.

The microscopic appearances have been described by Boit, and his findings have been summarized by Telford[3] as follows: "The spaces seen in the porous bone are bounded by thin walls of bone; these septa are lined by many osteoblasts by the action of which irregular osteoid bone is produced. A similar type of bone appears to arise also by the direct conversion of connective tissue which is very abundant in the diseased areas. Hand in hand with these processes there occurs an absorption of bone which results in the formation of spaces and canals. The thin walled vessels in the bone bleed easily and hæmorrhages are common. On the whole, this new formation of bone appears to preponderate slightly over the destructive changes so that the net result is a steady increase in the size of the diseased bone."

Treatment.—While there is a wide divergence of opinion as to ætiology, there is practical unanimity that any form of medical treatment is unavailing. It has been found that removal of the bony masses on the frontal and parietal bones is occasionally effective in relieving headache. The complete blocking of the nasal passages in some cases has led to efforts to re-establish patency by chiselling through the obstructing bony masses. Putnam has suggested that the bone might be starved by shutting off its blood supply.

Of special interest to ophthalmologists are measures which have been suggested and carried out to ameliorate the ocular complications. Horsley, in a patient with unilateral exophthalmus and diplopia due to a large frontal growth which extended into the orbit, removed the mass together with the anterior two-thirds of the orbital roof, resulting in recession of the globe and abolition of diplopia. Optic neuritis and beginning optic atrophy due to pressure on the optic nerve as it passes through the nar-

3. Telford. M. d. Chronicle, LIX, 85-92.

rowing optic foramen, demand even more radical measures. In such a case, Horsley removed the roof of the orbit as far back as the sphenoidal fissure, the major part of the great wing of the sphenoid, the upper part of the malar bone, and finally, in order to relieve pressure on the nerve, resected the lesser wing of the sphenoid.

Kanavel found that in fifteen cases with well defined symptoms of cerebral compression, only four presented eye symptoms "suggesting that the optic neuritis may be as much due to local changes in the orbital cavities as to the cerebral pressure". Should, however, signs of increased intracranial pressure arise a decompression should be considered.

Case Report.—H. S., female, born 1873, the seventh of a family of 13 children. Birth normal. Breastfed, but weakly. Always "delicate". At 10 years patient noted difficulty with respiration and had trouble in speaking plainly "as there seemed to be some obstruction back of the palate". Growths back of palate (adenoids?) were removed by a physician. Had several attacks of pneumonia. A few years later she was treated for "catarrh" by cauterization of the nasal mucosa. At 17 years she began to notice a swelling at the inner corner of her left eye involving the nasal process of the superior maxilla. (That the swelling may have begun earlier is suggested by childhood photographs which show abnormal bone development between the eyes.) Other hard masses appeared, especially in the orbital plates of the frontal bone in the region of the superciliary ridges and on the nasal process of the right superior maxillary bone. In the meantime the nasal passages were becoming very narrow, and in 1903 she consulted Dr. John A. James, who found a practically complete bony occlusion. There was complete anosmia and frontal and temporal headache, often very severe. At this time the patient was also under the care of Dr. Carl Fisch. In 1907 she was referred to Dr. W. W. Graves, who very kindly permitted me to examine her eyes. (Dr. Graves will shortly publish a complete report of this case.)

Ocular Examination, February 11, 1907.—Both globes very prominent and widely separated (wears glasses prescribed by an oculist 10 years before which measure 75 mm. in width, indicating that even at that period there was notable separation of the globes). Pupillary distance is now 81 mm. Moderate epiphora, both.

On viewing the patient in full profile, it is seen that the apex

of each cornea is well in advance of the level of the nasal bridge. The right globe is pushed downward to a level 4 mm. below that of the left. Distance between inner angles 41 mm. Patient can completely close both eyes, but only by a distinct effort. Width of head at level of eyebrow 14.5 c.m. Width of face at level of malar bones 10.5 cm. Palpebral apertures slant downward and outward, making an angle of say 15 degrees with a horizonal line; right palpebral aperture 11 mm., left 10 mm.

Figure 1.

Photograph taken in 1907. Note exophthalmus, widening of nasal bridge, and rounded bony bosses on either side of nose. Divergence of left eye on attempt to converge.

This picture shows habitual expression of patient, with mouth slightly open because of complete occlusion of nasal passages.

wide. When the patient looks directly forward, 2.5 mm. of sclera is visible below cornea in R.E., 1.5 mm. in L.E. On attempted fixation of an object held 50 cm. or nearer, left eye deviates out. (See Fig 1.) On attempted version to the right, R.E. limited. L.E. very much limited (goes only 20 degrees past median line, then comes to a full stop and cannot be made to move farther by any effort of the will). R.E. continues to the right after the L.E. has come to a full stop.

Levoversion: R.E. stops 20 degrees to nasal side of median line. L.E. continues to within 4 mm. of outer angle. At position of extreme right and left version there is marked crossed diplopia. Upward rotation quite free, both eyes diverging. Downward rotation fair, left eye deviating outward.

R.V., 5/5; L.V. 5/6. Ophthalmoscope: R., eyeground normal; L., disk margin veiled up and in.

Maddox test: Exophoria 30 degrees; no hyperphoria. Eyes out behind screen.

Figure 2.

Photograph taken in 1915. Note recession of ophthalmus, narrowing of pupillary distance, flattening of bony bosses on sides of nose, and closed mouth.

Form field (see diagrams): full O.D., slight superior and temporal contraction O.S. Color sense normal. No central color scotomata.

Refraction: Right, +5, 5/5; Left, +.75c. ax. 15°=5/8.

May 4, 1907.—Ophthalmoscope: As at first examination, October 17: decided general improvement. (Has been on calomel gr. 1/20 ter die.)

February 8, 1908. Exophthalmus not diminished but patient feels subjectively much better. While manipulating the right

eyelids the right globe suddenly shot forward in front of the lids and remained proptosed for a moment or until the patient by gentle manipulation pressed it back into the socket.

Patient not seen again until October 20, 1913. Right, +1. V. 5/8. Left, +5⊂.75c ax. 30, 5/8. Both globes receded somewhat.

Both discs now somewhat pale, especially temporal halves, the margins not distinct, both arteries and veins narrowed. Visual fields concentrically contracted, L>R. The narrowing of the field taken in conjunction with the failure in vision and the appearance of the discs, makes the diagnosis of partial atrophy consecutive to neuritis justifiable.

January 13, 1914.—No change ophthalmoscopically. Vision as before. The most recent observation, July, 1915, gave me the chance to compare facial measurements and ocular movements made in 1907 with those made in 1915.

COMPARATIVE MEASUREMENTS.

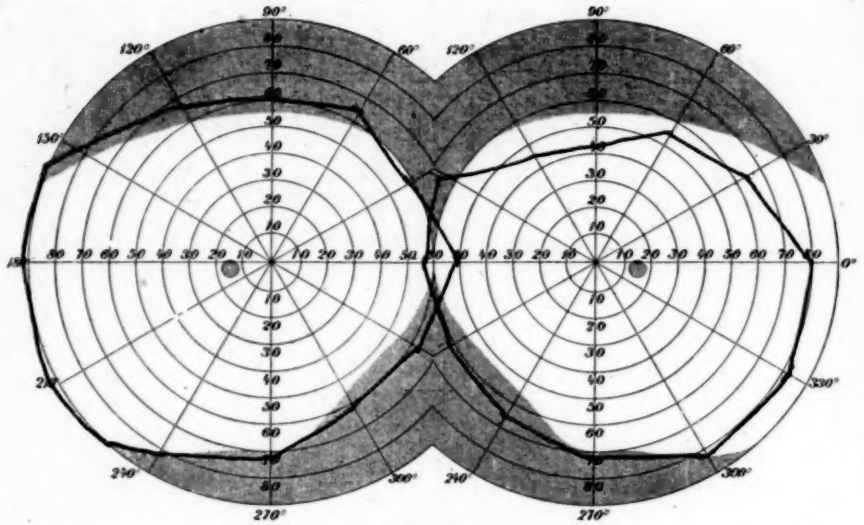
	1907.	1915.
Corneal apices,	In advance of nasal bridge	2 mm. behind nasal bridge
Position of globes,	R. 4 mm. lower than L.	R. 1 mm. lower than L.
Bitemporal diameter,	16.5 cm.	16.5 cm.
Bimalar diameter,	10.5 cm.	10.5 cm.
Pupillary distance,	81 mm.	73 mm.
Between inner angles,	41 mm.	39 mm.

MOTILITY OF GLOBES.

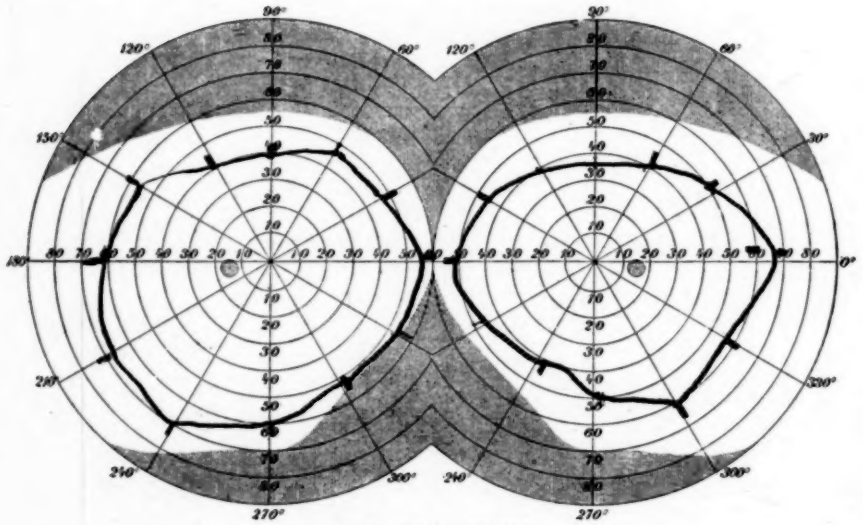
	1907.	1915.
Dextroversion,	Left restricted	Left free
Levoversion,	Right restricted	Right free
Upward rotation,	Restricted	Free
Downward rotation,	Left eye deviates out	Left eye deviates out
Diplopia,	On rotation to right and left	None
Exophoria,	30°	4°
Convergence,	Up to 50 cm.	Up to 8 cm.

Summary.—During the eight years the patient has been under observation, the globes have notably receded, the interpupillary distance has lessened, motility has increased and the convergence near point has withdrawn from 50 cm. to about 20 cm.

During this period there has been a positive decrease in the size of the bony bosses adjacent to the nose and a reestablish-



H S., February 13, 1907



H. S., October 22, 1913

ment of patency in the nasal cavities so that now nasal respiration is possible. Headache and neuralgia which formerly were very severe have practically disappeared. We are dealing, then, with one of the exceedingly rare cases of leontiasis ossea in which improvement has taken place without surgical intervention. Opinion is practically unanimous that while

the disease may show periods of inactivity, a cessation of the process with recession of the growths is not to be expected. The case reported, as well as one related by Bockenheimer, clearly shows that, while the statement above may be generally true, it is not invariably so.

SYNOPSIS OF CASES OF LEONTIASIS OSSEA SHOWING INVOLVEMENT OF THE EYES OR ADNEXA.

Ager: *Arch. Pediatrics,* 1909, XXVI, pp. 14-19.

Male child, age 6. Diabetes insipidus. Head enlarged (a well-shaped not rachitic head). Skiagrams showed marked thickening of frontal bone and orbital plate of malar bone. Marked bulging right frontal, malar, and upper part right superior maxillary bone. Eyes: right exophthalmus. Epiphora.

Allen: *Australian Medical Congress,* Vol. II, 1908, pp. 339-44.

Male, age at death about 30. Disease began at 10, ascribed to kick in the face by a horse. Immense overgrowth of bones of face, involving especially the inferior and superior maxillæ, malars, lacrimals, ethmoid, wings of sphenoid, vomer, lower part of the frontal and parts of both parietals. Eyes: Extreme exophthalmus, "eyes projected sideways like a lobster's," divergent strabismus. Dacryocystitis. V. Good.

Bardenheuer: *Deutsch. Med. Woch.,* No. 13, March 29, p. 525, 1906.

Case with blindness due to pressure on optic nerve.

Bickersteth: *Trans. Path. Soc.,* 1866.

Began at 14. Observed at 30. General enlargement of facial bones. Eyes: Exophthalmus, left eye became blind.

Bockenheimer: (Patient originally of Scheier). *Arch. f. Klin. Chirur.,* Berlin, 1908, LXXXV, pp. 511-548.

(1) Hyperostosis beginning L. frontal region, following injury. (Young girl.) Thickening of right lower orbital border, later, left nasal process. Eyes: Exophthalmus, uninterrupted stillicidium. V. diminished, diplopia (at times), due to strabismus divergens. Myopia. This case was subjected to Hg inunctions and K.I. "without effect". Fifteen years later came under Bockenheimer's observation enormously improved; great recession in bony growths, no exophthalmus, stillicidum or strabismus.

Cole: *Quart. Bull. Northwestern Univ. Med. School,* September, 1909, Vol. II, No. 2, pp. 141-147.

Male, age 22. Trouble from 2½ years. Convulsions. At 7 swelling under right eye, later swellings lower and upper maxillary bones. Large bony masses either side of nose and left lower maxilla. Complete occlusion of nose. Eye (Dr. Geo. F. Suker.) Bilateral exophthalmus, conjunctival hyperæmia, reduced sensibility in each cornea; right suppurative dacryocystitis. Moderate choked disc (both). Pupillary reactions sluggish, slight restriction in motility.

First operation: Bony bosses, together with part of floor of each orbit removed. An opening ¾ inch in diameter was made directly back through the bone to the posterior pharyngeal vault. After operation Dr. Suker noted recession of the exophthalmus, cessation of conjunctival hyperæmia, diminution in choked disc, reappearance of corneal sensation, normal ocular excursions. At a second operation bony masses on lower jaw were removed; nine months later a decompression helped the headache.

Dupasquier and Dufour: *Bull. de la Soc. Méd. des Hopitaux de Lyon,* May 1914, pp. 364-366.

Female, 46. Syphilitic (several miscarriages and Wassermann plus). Severe headache. Bony masses either side of nose (beginning two years before). Nasal passages obstructed almost completely. Eyes: Visual failure, due to optic neuritis.

Ellis: *Archives of Ophthalmology.* Vol. XXVIII, No. 4, pp. 379-385.

Male, 60. Temporal and infraorbital enlargements. At 39, exophthalmus first observed. Age 48, L.V. failed. R.V. affected soon after. Several abscesses; nose blocked. Anosmia. Eyes: Eoxphthalmus; great limitation in motility. R.p.l. L. 18/30 (field contracted). Optic atrophy, both. V. finally failed to complete blindness both.

Fischer: *Deutsch Zeitsch. f. Chirurg.,* Bd. 12, No. 57, 1879.

Female, age 30. Growth involved orbit, superior and inferior maxillæ. Eyes: Both eyes blind. (Cause of blindness not stated).

Gunn: *Lancet,* July 11, 1885, p. 67.

Female, age 22. Symmetrical enlargement of the upper half of the face. Thickening and tenderness of the superior maxil-

lary bones. Eyes: Exophthalmus, right pupil active. Left, faintly active. Failure of vision (both discs atrophied). Veins large and tortuous.

Hankel: *Berl. Klin. Woch.*, 1884, XXI, p. 560.

Left side of face especially zygome is enlarged. Lower part of the orbit is larger than normal. Eyes: Total corneal staphyloma with phthiasis bulbi, conjunctiva inflamed; lower lid shortened to such an extent that eye cannot be closed.

Heath: *Garretson's System of Oral Surgery.* 3rd edition, p. 824.

Hyperostosis implicating orbits. Eyes: Double lacrimal abscess, exophthalmus. Eyes lost, one from inflammation, the other from a blow.

Horsley: *Practitioner,* London, 1895, LV, pp. 12-25,

Case 1.—Male, age 19; bony growth principally over left eyebrow, extending to parietal and occiptal bones. Growth projected into orbits. Eyes: Exophthalmus down and forward.

Case II.—Male, age 28. Trouble began as an exostosis on each side of nose. Later ramus of jaw on right side, right inferior maxilla and left inner half of floor of orbit involved. Eyes: right exophthalmus, no diplopia, epiphora. Ocular movements normal. Both discs atrophic. Right vision, perception of light; left vision, "impaired".

Case III.—Female, age 13. Left frontal tumor reaching down to orbital margin at outer side. Eyes: Double vision. Operation: Tumor removed together with the roof of the orbit in its anterior two-thirds. One year later slight ptosis and exophthalmus.

Case IV.—Bony growth right side of forehead and frontal region. Orbital margin thickened. Eyes: Right eye exophthalmus down and forward. Vision "abnormal". No diplopia. Fundus normal.

Operation.—The roof of the orbit as far back as the sphenoidal fissure, the major part of the great wing of the sphenoid and the upper part of the malar bone were removed by operation. At the back of the orbit the optic nerve in its sheath and the structures passing through the sphenoidal fissure were laid bare by resection of the small wing of the sphenoid.

Horsley expresses the opinion that leontiasis ossea is a "hopeless" condition for which operation offers considerable relief.

Howship: *Practical Observations in Surgery and Morbid Anatomy,* London, 1876, p. 22.

Male, age 40. Hyperostosis of frontal superior maxillary. High grade exophthalmus. One eye lost from inflammation, the other from a blow.

Ilg: *Einig. Anatom. Beob. Von der Succk.* Prague, 1822.

General hyperostosis of the head. Eyes: Blindness.

Kanavel: *Surg., Gynecol. and Obstet.* Vol. IV, 1907, p. 732.

Male 30, growth since 20. Excessive development superior maxilla. Cranium not enlarged. Eyes: Dacryocystitis.

Lagleyze: *Annales de Ofthalmologia,* June, 1914, T. XVI, No. 12, pp. 529-536.

Male, age 19; history of injury to root of nose at age 12. Superficial injury promptly healed. Five months later root of nose began to increase in volume, likewise the cheek bones, enlargement of inferior maxillæ. Two years later supraorbital pain and enlargement of nasal bosses. Eyes: Severe ocular suppuration resulting in blindness. R., adherent leukoma with atrophy of the globe. L., several leukomata with posterior synechiæ (optical iridectomy performed).

Law: *Medical Press and Circular,* February 6, 1907, p. 147.

Male, age 12. Bilateral infraorbital growths. Exophthalmus outwardly. Bilateral dacryocystitis.

Nauwerck: *Dermat. Studien (Hamb. u. Leiz),* 1910, XX, pp. 621-630.

Body of 21 year old male. Necropsy 16 hours after death, February 5, 1910. Extraordinary enlargement of the whole head. Frontal region, especially the tuberosities are greatly developed. Right temporal bone bulged out. Enlargement of the lower jaw. Right orbital margin thickened to 3 cm. The orbit narrowed by encroachment of bony masses from behind and to the outer side. Left orbit also narrowed but to less extent than right.

Eyes: Right exophthalmus, subconjunctival hæmorrhage; right nerve head pale, well defined, a little cupped, with widened blood-filled veins. Left slight exophthalmus. Left nerve head reddened. Examination of the skull showed the right optic foramen much narrowed by bony growths. The right optic nerve as far as the chiasm is flattened, gray and atrophic. The left nerve normal. Serological examination of the heart's blood showed a

3 plus Wassermann. The following history was obtained from relatives:

Parents died about 40 of unknown cause. Bony enlargement of lower jaw began at age 3. At age 7 swelling on frontal bone gradually enlarged and spread. A picture post card taken 4 years before patient's death showed the characteristic cranium of leontiasis ossea with well marked right exophthalmus. Right vision failed to blindness. Left vision "weak".

Noble: *Brit. Med. Journ.*, December 5, 1896, p. 1637.

Male, age 20 (?). This case represents the most hideous deformity of any case so far pictured. Tremendous enlargement of bone at either side of the nose, so that eyes are separated enormously. Distances from one inner angle to the other 1.5 cm. Eyes: Palpebral apertures slope up and out. No apparent exophthalmus. Vision not recorded.

Pizzorno: *Resoconto clinico statistico degli ospedali de Geneva.*

General Hyperostosis of skull and face. Eyes: Visual failure. Neuritis optica.

Putnam: *Amer. Jour. Med. Sciences,* July, 1896.

Case I.—Female, married. Symptoms first observed after first confinement at 19. (Headache, pain in ears and eyes.) Deafness, double facial paralysis, generalized enlargement of cranium. Eyes: Exophthalmus, bilateral. R. pallor of disk. L. dense, defined, spicule of cortical lens opacity. Owing to uneasiness of patient no view of fundus obtained.

Case II.—At age 5, unconsciousness following fall, later epileptiform convulsions. Two broad exostoses on top of head, forehead rounded, frontal bone grooved; occiptal prominence marked. Eyes: Exophthalmus, bilateral mild optic neuritis. Vision failed almost to blindness. Death.

Case III (Patient of Prince).—Swelling of frontal bone after trauma, headache, mental dullness, hemiparesis. Eyes: Exophthalmus. Partial atrophy, right optic nerve. Retinal hæmorrhages. V. impaired. Necropsy; frontal bone enormously thickened, orbital and anterior cranial fossæ much diminished. "The convolutions of the frontal lobes were plainly compressed between the orbital plates below and the frontal bone above."

Ribel: (Quoted by Baumgarten.) *Thèse de Paris,* 1892.

Male, 46. Superior maxilla; orbits contracted between 20 and 30 followed by proptosis. Dacryocystitis.

Sattler: *Trans. Amer. Ophth. Soc.*, 1900-02, IX, p. 59.

Began age 11, observation at 20. Bony swelling began in superior maxilla, left side larger than right. Eyes: Epiphora, stricture of the left nasal duct. Exophthalmus, left greater than right. At 19, optic atrophy both.

Stark: *Bristol Med. Chir. Journ.*, 1900, XVIII, pp. 316-320.

Male, observed age 21. Death at 41. Entire skull and head enlarged uniformly. Eyes: Vision normal; orbits contracted vertically and horizontally. Eyes not displaced. Dacryocystitis with complete occlusion of bony duct.

Virchow: *Krankhafte Geschwuelste.*

Following evacuation of a lacrimal abscess bony growth right superior maxilla, rapidly spread to other parts. Eyes: Exophthalmus, myopia, finally blindness. Death at 45 years.

Wrany: (Quoted by Baumgarten) *Thèse de Paris*, 1892.

Anterior portion of cranium mostly involved. Right tear duct closed. All vascular and nerve canals surrounded by excrescences, but not contracted.

Young: *Brit. Med. Journ.*, 1896, 2, p. 1303. (Pictures very closely resemble condition in case reported.)

Male, began at age 30. Death at 46. Bony bosses on either side of nose. Prominence and thickening of the supraorbital ridge on each side. Orbit diminished in size. Eye symptoms: Vision "weak", exophthalmus and ectropion.

Ziehl: *Archiv. f. Path. Anatomie*, 1883, XCI, pp. 92-105.

Hypertrophy of the right superior and inferior maxillæ encroaching on the eye and nose. Skull not involved. Lesion began in childhood. Eyes: Right, slight exophthalmus; right strabismus convergens. Right iris diameter larger than left iris diameter. Pupils equal; right myopic; left emmetropic. Ophthalmoscope negative.

MEDICAL SOCIETIES.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

Fifty-First Annual Meeting, at New London, Connecticut, July 7th and 8th, 1915.

Dr. G. E. de Schweinitz in the chair.

Reported by Miss Lulu Gay.

(*Continued from September number.*)

A More Exact Method of Measuring Fields of Vision and Arcs of Rotation.—By Lucien Howe, M.D., Buffalo, N. Y.

The difficulty of obtaining constant results when measuring fields of vision or arcs of rotation is well known. The sources of error are: (1) The center of the eye is not made to correspond to the center of the arc of the perimeter and is not ordinarily held in that position. This is obviated by a "gun-sight" attachment to the carrier on the perimeter, and by the Helmholtz bit for steadying the head. (2) the test object on different perimeters varies in its nature and in degree of illumination, and, if it is itself luminous, reflections from it are confusing. These objections are obviated by an electric light of a certain intensity and color placed at the distal end of a small blackened tube.

The arc of rotation of an eye can be measured with the perimeter outward and usually upward. Such measurements are often sufficient to determine whether a given deviation is due to excessive action of one group of muscles or insufficient action of the opposing group. The answer to that question enables us to decide in a given case whether to make tenotomy of one muscle or advancement of its opponent.

A Simple Modification of the Berger Loupe.—By E. A. Shumway, M.D., Philadelphia, Pa.

The modification consists in the attachment of a brass clip to its side, for the purpose of holding a small lamp recently placed on the market by the Ever-Ready works, which has the size and appearance of a stylographic pen. It contains a small one-cell battery, which illuminates a small Tungsten filament lamp and

has a permanent turn-on arrangement. The light rays from the lamp are projected towards the focal point of the Berger loupe. The apparatus is of especial value for the removal of foreign bodies and in pulling out delicate misplaced cilia from the eyelids. It gives an independent source of illumination, and leaves both hands free for the manipulation of the eye spud and for holding the patient's eyelids. It is independent of wires, batteries or rheostats, and can be readily removed from the loupe when illumination is not required.

DISCUSSION.

Dr. Marple: I have had the loupe in my office for some time now; but I rarely use it, because with the electric ophthalmoscope the foreign bodies can be localized more easily than with any reflecting apparatus.

Dr. E. A. Shumway, Philadelphia, Pa.: This apparatus has the advantage of leaving both hands free. No assistant is then necessary. The lids can be held with one hand, while the instrument is manipulated with the other. and the lighting apparatus is entirely independent.

Stronger Eye Magnets.—By Walter B. Lancaster, M.D., Boston.

The average eye magnet could be made 100 per cent. stronger. Means might be made use of by designers of eye magnets to increase power without sacrificing ease and precision of manipulation: (1) The core is rarely at fault; (2) the coil is often too thick; it should never be in two parts with a space between, as in the Haab model; (3) the pole-pieces or tips are usually too long and not properly tapering; (4) the current strength constitutes the most important single way of increasing attractive power, but means must be used to guard against burning out the coil, viz.: (a) a foot-switch, and (b), in some cases, non-inflammable insulation (enameled wire). Giant magnets, large hand magnets, small hand magnets, may be used.

DISCUSSION.

Dr. William M. Sweet, Philadelphia, Pa.: The magnet that I use is made very much like the one that Dr. Lancaster refers to, except that we use the conical point. I do not think that the loss of current by making it a perfect cone is sufficient to weaken the magnet; although it does interfere with the view of the operator, if it is not a perfect point. The difficulty in winding

the magnets with fewer turns is that the magnet then heats more rapidly. The one that I use myself at home is the strongest of four which were tested. I do not think that a switch which I myself use is as good as one operated by my assistant. My assistant knows that the moment I put the magnet to the eye, he must turn the current on; and that the moment I draw the magnet away, he must turn the current off.

Dr. Marple: What is the size of this magnet?

Dr. Lancaster: The larger magnet is one meter long and ten centimeters in diameter.

Dr. Marple: What does it weigh?

Dr. Lancaster: About one hundred and fifty pounds. It is a little heavier than the Haab magnet. In a magnet intended for a number of operators, it is desirable to have the foot switch. If a man does not want to use it, he need not.

The May Electric Ophthalmoscope.—By C. H. May, M.D., New York, N. Y.

The essential advantage in my electric ophthalmoscope, and the one in which it differs from and is superior to all other luminous instruments of this sort, is the substitution of a solid rod of glass, acting as a condenser at the lower part, and as a reflecting prism at the upper part, with the addition of other converging surfaces sufficient to gather the rays with which the fundus is lighted; so that the result is a solidly illuminated surface. We employ an Argand burner as the source of illumination in most cases; for if we employ an electric lamp, we must get rid of the filament effect by using a spiral filament and a frosted globe.

DISCUSSION.

Dr. Verhoeff: When using an electric ophthalmoscope, indirect illumination draws the image very near, and you see the details that you do not see in throwing a strong light directly on the object. If you throw the flame a little to one side, you can then take in details that you cannot see when the whole fundus of the eye is evenly illuminated.

Ocular Phenomena Accompanying Three Cases of Gastro-Intestinal Disorder.—By Hiram Woods, M.D., Baltimore, Maryland.

The paper presents the following cases:

1. Chronic uveitis accompanied by gastro-intestinal disorder;

the severity of the eye lesion varying with the condition of digestion. Clinical dental examination made at the beginning was negative. The subsequent history suggests the possibility of this being erroneous and of a dental origin of the uveitis. This might have been discovered earlier by other means of diagnosis.

2. Failing vision, with central red scotoma. There was a recovery of normal vision after an operation for gall-stones and partial intestinal obstruction, with correction of the diet. Occasional glycosuria was present and, later, temporary retinal exudates, following indiscretion in eating, with signs of intestinal putrefaction.

3. Constant paracentral scotoma, with shifting location. There was an absence of explanation save association between the size and position of this scotoma and what the patient regarded as indiscretion in eating and drinking. Whether or not this was causative the author cannot say.

DISCUSSION.

Dr. C. H. May, New York, N. Y.: The paper of Dr. Woods reminds me of a patient whose principal symptom was an absolute central scotoma of one eye. It extended ten degrees from the point of fixation. There was no evident reason for the presence of this condition. The vision was 20/50. The patient was subjected to all kinds of tests, and it was finally concluded that the trouble was due to intestinal intoxication. After cathartics had been used liberally, and high irrigation, the vision would increase and the scotoma would become relative, extending but two or three degrees from the fixation point. Then, by experimenting, we proved that the eye condition was dependent upon the state of the gastrointestinal tract. When the bowels were cleared out and high colon irrigation made use of, the vision improved and the central scotoma, although it did not disappear entirely, became relative and smaller. The man was kept under observation for two years; and during this time there were attacks of the same character, subject to the same changes, according to whether the bowels had been properly emptied or not.

Dr. W. Gordon M. Byers, Montreal, Canada: I should like to ask whether Dr. Woods entertains the idea that in his second case the axial neuritis was due to the accompanying glycosuria. In the two cases of this kind that I have seen, the amount of sugar present was very small indeed.

Dr. Hiram Woods, Baltimore, Md.: In answer to Dr. Byers, I would say that the glycosuria that this man had was transitory and recurrent in nature. It was never found present when his bowels were kept free. He also had high colon irrigations at times; but the glycosuria occurred in connection with constipation and symptoms of indigestion, and would clear up when these symptoms were relieved. Dr. Brown thought that the glycosuria was due to secondary involvement of the pancreas. I wish that I had had time to read an extract from an unpublished paper by Dr. Brown, read this winter. He thinks that the condition is due to a toxin, and that the failure to discover this toxin is the result of the minimal amount of it that is present and the fact that we know so little about the toxin, rather than of the fact that it is not present. He believes that toxemia, based on retention and putrefaction is probably the best explanation that we have. Our President thinks that this toxin is present in the eye, in the tissues for which it has a chemical affinity; and that the condition is practically due to lack of function.

Examination of the Spinal Fluid in Affections of the Eye.—By James B. Ayer, M.D., Boston (by invitation).

The paper is based on the examination of one hundred and sixty cases of especial interest to the ophthalmologist. The problem in most of these cases is to find out whether they are syphilitic or not. The cases examined included external oculomotor palsy, primary optic atrophy, optic neuritis and choked disc, abnormal pupils (including the Argyll-Robertson pupil), irregular pupils, and normal pupils with positive tests. In some of these cases, the examination was only intended to be confirmatory or for the sake of following the effect of treatment. In others, the diagnosis depended on the findings. I believe that the principal value of puncture is to be found in cases of slightly uneven or irregular pupils, perhaps with a sluggish reaction; in early diplopia, with or without evident palsy; in suspected beginning atrophy; in certain forms of headache; and in epilepsy and migraine.

DISCUSSION.

Dr. Knapp: We have had the opportunity, during the past year, of following a case of influenzal optic neuritis with the typical star figure, in which the examination of the lumbar fluid gave a cell count of 21, with positive globulin. The Wasser-

mann was positive, both in blood and spinal fluid. I should like to ask Dr. Ayer what significance he would place on the findings. After two weeks, the cell count showed 14, with globulin zero; and the last examination showed a cell count of one. The case exhibited the usual course of the disease; and the patient gradually got well, in ten weeks to three months.

Dr. de Schweinitz: While it is perfectly true that in most instances of exterior oculomotor palsy, if the patient does not recover within six months, we are not likely to get the result, it is also true that in a certain number of instances of it, after it has affected the abducens, the condition may exist for a long time uninfluenced by any ordinary treatment, and yet recover later. Ordinarily, when tests show syphilis as the cause of the palsy, recovery will take place. It is important that Dr. Ayer has emphasized the danger of lumbar puncture in connection with brain tumor. I knew of one case in which I wished that it had been done.

Dr. James B. Ayer, Boston, Mass.: In reply to Dr. Knapp, I would say that his patient might have had localized influenzal meningitis, which is not infrequent. The patients do not usually die of it. On the other hand, he might have had a simple toxic condition. The lining of the spinal canal is a delicate affair; and it does not take much to cause a mild irritation of it, but not a definite meningitis.

The Miliary Choroidal Tubercle as Associated with Tuberculous Cerebrospinal Meningitis.—By Frederick Tooke, M.D., Montreal, Canada.

The writer has collected a review of 100 cases of tuberculous cerebrospinal menigitis with pathological findings in 58. A number of associated conditions were noted in the fundus oculi. Tubercles, when found, were generally noted in young adults. This condition was occasionally noted to be associated with an early form of perineuritis or of perineural œdema. The presence of tubercles of the choroid was a late manifestation, frequently appearing only a few hours before death.

The earliest manifestation of a tubercle of the choroid is a dilated choroidal capillary. This is followed by perivasculitis, with ultimate strangulation of the vessel. The tubercle being an acute manifestation, death of the individual ensues before any central necrosis or caseation occurs. Definite giant-cell formation, however, has been detected.

The pathological process of a tubercle never involves scleral tissue, and it extends up to, but never beyond, the membrane of Bruch. An associated condition of perineuritis is the result of an infiltration of leukocytes through the pial sheath in the orbital portion of the nerve. It is less likely to be regarded as a slow filtration from the cranial portion passing through the sphenoidal fissure and then into the intervaginal space.

DISCUSSION.

Dr. Marple: I should like to say just a word on the subject. I might say, in the first place, that all the cases that I have seen were in babies. that is, children under two years of age. On one occasion, I examined a child at six o'clock in the evening, and discovered no evidence of choroidal tubercle in either eye; and at ten o'clock, the House Physician telephoned that he had found one in a spot in which it had not been located four hours before. I saw that case the next day, and corroborated the discovery. In another case, I had an assistant, one afternoon, draw the fundus of an eye in which there were several tubercles; and the next day, there were two additional ones present. It is exceedingly difficult to make an examination at all in these children, on account of their being moribund and on account of the condition of the cornea. The discovery of the tubercles depends on the frequency of examination in young children.

Dr. Koller: I have found that children with tuberculous meningitis always have tuberculosis in the background of the eye. It is the rule to find miliary choroidal tubercles in children that are near death from tuberculous meningitis.

Dr. Randolph: I should like to ask Dr. Marple whether he has confirmed any antemortem cases by histological examination.

Dr. Marple: There was published the result of the histological examination in one case. It was a rather unusual case, with large tubercles and involvement in the vicinity.

Dr. Randolph: It is evident that frequent examinations are necessary to convince one that one is really dealing with a choroidal tuberculous condition. For a long time, I was faithful in making repeated examinations, but failed to find what others had. Since January, however, I have come across two cases; but they were not ones in which one was called on to use magnification. They were so gross that one could not consider them to be anything else. Both children were under one year of age, and both died. These were the only two cases of tuberculous choroiditis that I have seen.

Dr. Derby: Dr. Tooke's paper explains to me, for the first time, those cases of proliferating retinitis and perivasculitis of tuberculous origin occurring in young adults.

Malignant Uveitis.—Dr. James Bordley, Jr., M.D., Baltimore, Maryland.

The ocular manifestations, except for intensity of the symptoms, were the same in all of the nine cases. The course of the disease was slowly progressive. The first symptom was photophobia, followed by loss of visual acuity; and exudates appeared on the posterior corneal surface. Dilatation of the pupil and a greenish discoloration in the base of the iris were early symptoms. A large number of cysts were found in the bulbar portion of the conjunctiva, encroaching, in places, on the epithelial layer of the cornea. Engorgement of the retina was noted in five cases. In no case was there a lesion found in any of the so-called vital organs.

Treatment included mercury, iodide of potassium, pilocarpin and sweat baths, fresh air, milk and eggs, rest, and subconjunctival injections of sodium chloride and bichloride. No improvement resulted, except relief from pain. The only treatment that was of any avail was with thyroid extract. We are convinced that we have to deal with two factors in these cases: infection, and an eye that makes a strong defense, but lacks the something necessary for an offensive fight.

DISCUSSION.

Dr. Walter B. Weidler, New York, N. Y.: I should like to ask Dr. Bordley whether he employed the von Pirquet method or made subcutaneous injections. I had an interesting case of uveitis in a woman thirty-five years of age. She had had the diseased eye enucleated on account of uveitis. There was a history of injury to that eye. When we had the woman under observation I found, the first time that I saw her, that her vision in the remaining eye was 20/50. This gradually decreased, until it was 20/100. The Wassermann test was negative, and her history was negative, as to syphilis. A von Pirquet was positive. A subcutaneous injection of tuberculin was made, and we got a general reaction, with a rise of temperature, and a focal reaction in the eye. The patient was put under treatment with injections of tuberculin emulsion, the treatment being continued for two months or more. There was a gradual improvement in

the condition in the eye, no other form of treatment having been used during this time. The condition in the right eye entirely cleared up, and she left the hospital with a vision of 20/15. I was extremely interested in the case, for the reason that the left eye had been previously removed for an apparently similar condition. Dr. Bordley stated that tuberculin had been used for a certain length of time in one of his cases; and I should like to ask how long he used it, and in how large doses, before he changed the treatment to iodides.

Dr. O. Ring: I should like to ask Dr. Bordley about the dosage of thyroid that he used.

Dr. Randolph: I should like to ask Dr. Bordley whether there were any distinguishable features in this eye or any other fact to tell that it was malignant uveitis, and not a common uveitis, in which such remedies as atropin and iodide of potash could be used.

Dr. Samuel D. Risley, Philadelphia, Pa.: It occurred to me that many of our patients with interstitial keratitis might be classified as cases of malignant uveitis. Interstitial keratitis is associated with conditions which impair the general vitality or nutrition of the individual, and more or less directly dependent on them. It is not necessarily syphilitic in origin. The general viciousness and general impairment of nutrition may fall on the thyroid, thus weakening the function of the thyroid in maintaining the general nutrition. I have reported cases that had failed to recover or improve under the methods of treatment adopted for interstitial keratitis, but had recovered under the use of pulverized thyroid gland of the sheep. All that was needed for these patients to recover from this malignant condition was the restoration of the function of the thyroid, which was caused by the administration of the gland. In those cases distinguished by malignant uveitis, the malignancy may have depended on the condition that I have outlined.

Dr. William K. Rogers, Columbus, Ohio: I should like to ask Dr. Bordley whether he considers the administration of thyroid necessary after apparent subsidence of the ocular symptoms has occurred, or whether it is simply indicated during the continuance of the active inflammatory condition.

Dr. James Bordley, Jr., Baltimore, Md.: In regard to the amount of tuberculin used in the first case and the length of time it was used, I am sorry to say that I am unprepared to tell the dosage. The doses were given from May until July. During

that time, the patient's vision fell rapidly, and the treatment was changed. The dosage of thyroid extract depends very largely on the individual. With some patients, we give as much as five grains, twice a day; and with others, half a grain or a grain, twice a day, would produce palpitation. These cases differ from those of ordinary uveitis. The condition is malignant, in that, in spite of all treatment, there is no remission in the symptoms. This is quite different from the behavior of the opacity in ordinary uveitis. In regard to the length of time that I give the thyroid, I would say that I usually give it until vision is normal, or has reached what I consider to be normal vision for that eye.

Progressive Atrophy of all Layers of the Iris.—By G. E. de Schweinitz, M.D., Philadelphia.

The patient was a young woman, aged twenty-three, in whom atrophy had gradually developed in the left eye in the last three years, beginning with a slight change in the color of the iris and general thinning of its tissue, and going on to the development of several peripheral apertures, together with an eccentric position of the pupil, so that the appearance closely simulated that of polycoria. These small apertures have gradually enlarged, until at the present time there is almost complete disappearance of the iris, with the exception of a few trabeculæ. At no time was there inflammation or sign of cyclitis. On several occasions moderate rise of intra-ocular tension was present. The eye-ground and field of vision were normal. General examination indicated the possibility of latent glandular tuberculous infection; also the low nervous tone which might be caused by this infection. A well defined Chvostek symptom, which was attributed to intoxication from the gastro-intestinal tract, inasmuch as no other symptom of tetany could be found, was present.

DISCUSSION.

Dr. Zentmayer: In regard to the probable cause of this affection, we may theorize; but we can come to no definite conclusion.

Dr. W. F. Mittendorf, New York, N. Y.: The case of atrophy of the iris that I should like to report occurred in a young army officer who, at the age of ten or twelve years, had repeated attacks of rheumatic iritis. These passed away ,and he was able

to pass the examination for admission to West Point. Later, he graduated, and went to the Philippines, where he stayed for several years. On his return, he came to me for blurring of the sight and sensitiveness to light. I found that the entire iris had disappeared, leaving only little bands running from the pupil to the periphery. The condition presented the appearance of polycoria in a marked degree. Vision had dropped to 20/40 from 20/20. Later, he returned to the Philippines, where he had an attack of acute rheumatism and died.

Dr. Edward Stieren, Pittsburgh, Pa.: A patient came under my observation, two years ago, a stenographer, twenty-three years of age, who exhibited, when first seen, a purulent keratitis, a myopia of between three and four diopters, and a coloboma on the nasal side of the iris. It had followed a yellow spot on the iris a year before, and had gradually encroached on the pupillary margin towards this spot. With the idea that it was a gumma or tubercle, she was sent to the hospital, where a careful study was made, but with negative results. An iridectomy was done to correct the coloboma. This procedure did not give the patient any more comfort, so subsequently scleral trephining was successfully done. The eye remained quiet, with disappearance of the purulent keratitis; and the patient is entirely comfortable.

Dr. Robert S. Lamb, Washington, D. C.: Was the occurrence of pain in this case intermittent, or was there definite pain in the eye?

Dr. Weeks: Was there any evidence of peripheral choroiditis or any defect in the choroid in the case? It would seem to me that the condition indicated a disturbance or shutting off of the circulation of the iris from one part to the other

Dr. de Schweinitz: The eye-ground was absolutely normal. The visual fields were normal, and there was no sign of trouble with the choroid of any description. There were only three periods while the young man was under my care in which there was any pain. In each instance, except one, it was slight, and lasted only from twenty-four to thirty-six hours, being relieved by pilocarpin. On one occasion, however, it lasted over a week, and was enough to produce nausea and vomiting. There was no change in the iris itself. All tests made were negative, except the skin tuberculin test, which is positive in pretty nearly everybody. No internal remedies have been tried. I am going to give lactate of calcium.

Forms of Ophthalmia Met with in the Orient.—By Harry Friedenwald, M.D., Baltimore, Md.

Simple conjunctivitis is of frequent occurrence. The rarity of phlyctenular ophthalmia impressed itself on me. This is not easy to explain, because malnutrition is exceedingly common. Chronic conjunctivitis is of frequent occurrence, commonly associated with chronic trachoma. The types of acute ophthalmia met with in Palestine are more severe than those met with in this country, and more frequently lead to corneal destruction. The gonococcus is the cause of the rare and malignant epidemics, but is not found in the common varieties of the disease. The absence of ophthalmia neonatorum is remarkable. The frequency of trachoma is in direct proportion to the unhygienic conditions under which certain classes of people in Palestine live. Two-thirds of the cases originate in childhood. In the aged, the disease is of the chronic type. Cases of unilateral trachoma are also occasionally seen. There are some persons who enjoy a relative immunity to the disease, and great differences in susceptibility exist. The prophylactic agencies at work in Palestine during the past two years have resulted in great improvement.

DISCUSSION.

Dr. Lucien Howe, Buffalo, N. Y.: The point that I wish to call attention to is the effect of nutrition in the class of cases to which Dr. Friedenwald refers. It is, to my mind, a very large factor. The food is largely starchy; and the people live there under conditions in which the nutrition suffers.

Dr. Ring: I should like to ask Dr. Friedenwald whether he can tell the extent to which grattage is practiced there and whether the application of acetic acid in three or four per cent. solution, is or is not valuable.

Dr. Weeks: I understood Dr. Friedenwald to say that three stages of trachoma were observed from time to time in the same eye. I have never observed that. The early stage of trachoma is the stage in which the granules first appear. In the second stage these granules coalesce more or less completely. Then comes the stage of atrophy. To my mind, it is an impossibility for the three conditions to exist at once. Another statement made by the essayist was that acute conjunctivitis does not have a beneficial effect on trachoma. That is also a statement at variance with the experience of the most of us, I think. I have myself

observed many cases of trachoma in which acute contagious conjunctivitis was engrafted. In many cases, the effect has been an improvement in the condition of the trachoma. So far as the transition of the acute process into trachoma is concerned, that, to my mind, never occurs except through infection. That the conjunctiva may be more susceptible to the infection of trachoma after the acute process, however, is a view with which I fully agree.

Dr. Harry Friedenwald, Baltimore, Md.: The modern physicians are using the various surgical methods of treatment of trachoma, especially grattage, applying afterwards some mercurial or coppery solutions. Dr. Weeks is perfectly correct in stating that we can find only one form of trachoma at a time. When I stated that we often have two stages combined, I meant that different parts of the conjunctiva might show two different stages. The only explanation for this is the exceedingly chronic type of these cases, and perhaps a reinfection with trachoma upon an older case in which the cicatricial stage had already set in. I went to Palestine with the same prejudice concerning the good effect that acute conjunctivitis is said to have upon trachoma, but I saw there a number of cases in which mild trachoma was very greatly aggravated after acute ophthalmias. That this is not of frequent occurrence, I am quite sure, however.

Pemphigus of the Conjunctiva. (Report of two cases.)—By Edward Stieren, M.D., Pittsburgh, Pa.

One case occurred in a man forty-seven years old, a syphilitic, the other, in a child of six following vaccination. In both cases dermatitis bullosa preceded the ocular infection. In one case the vision improved; in the other, sight was lost, due to macular degeneration of both corneæ.

DISCUSSION.

Dr. Marple: In 1900, I reported literature based on the study of a patient that I had under observation from 1896, when the condition began. I first saw the patient in 1897. The process had begun in the right eye first, and subsequently in the left. When I first saw the patient, there was complete symblepharon, about opposite the margin of the cornea below. The man was sixty-five years of age, and gave no specific history. I divided the symblepharon easily, and transplanted a Thiersch graft,

which was successful, but had no influence on the spreading of this opaque mass on the cornea. The operation was done in the fall of 1898; and by the following April, the growth had increased to the edge of the pupil in that eye. Then it stopped. There was no further advance in the process for a year; but three or four years afterwards, in going through the blind wards on Blackwell's Island, I found the man. The left cornea was opaque. When I had seen him last, the process had reached the upper margin of the cornea. There was nothing that had any effect on it at all, so evidently the prognosis is hopelessly bad.

Dr. W. E. Lambert, New York, N. Y.: I had the opportunity, some years ago, of seeing a woman fifty years old, who had had a very general eruption, the diagnosis of which was not sure. It suggested smallpox to the physician, and the health officer was called in on that account. She had a general eruption all over her body, and the face particularly. All the mucous surfaces of the mouth and nose were involved, and the conjunctiva and the cornea were the seat of vesicular pustular eruptions. She had a high temperature, and was very sick. I regarded the case as one of pemphigus. The patient got worse and died, in four days, of sepsis. The origin of the sepsis was an infection from a submucous operation done a week before the beginning of the trouble, and the streptococcus was found; so I think that the origin of the cases, therefore, must be regarded as of septic nature.

Dr. Shumway: I think the question as to the presence of syphilis in these cases, is important. I have seen three cases. One of these was under my care at the German Hospital for three years. In this case, distinct raw surfaces followed the breaking off of vesicles, and a gradual entropion occurred. I had the throat and nose examined and lesions were found there. but the surgeons thought that they were of a syphilitic character. We had the Wassermann test made, and it was found positive. She afterwards developed septal perforation. She was put on anti-syphilitic treatment, and it is my impression that she improved while she was taking the treatment. Fewer plaques were seen, and fewer raw places. She now has almost complete adhesion of the lower lid to the bulbar conjunctiva. The cornea is still fairly clear. When syphilis occurs, and there is a strongly positive reaction, it is important to give mercurial anti-syphilitic treatment.

(*Concluded in November number.*)

ABSTRACT FROM MEDICAL LITERATURE.

By W. F. Hardy, M.D.,
St. Louis, Mo.

SYMPTOMS AND DIAGNOSIS OF LEPROSY.

Howard Morrow and A. W. Lee (*Jour. Am. Med. Assn.*, September 11, 1915), in an article dealing with symptoms and diagnosis of leprosy, mention among other things the usual ocular findings. They state that leprosy of the eyes is such an important subject that a short description should be given of the usual clinical manifestations. Involvement of the eye is common in all types of leprosy and occurs occasionally quite early in the disease. Excessive lacrimation is frequent in the nerve type of leprosy. This is followed by a marked xerosis causing atrophic shrinking of the mucous membrane and various distortions of the lids. Due to paralysis of the lid muscles and consequent inability to close the lids, drying of the cornea follows, with exfoliation of the epithelium, deep infiltrates in the parenchyma and involvement of the interior of the globe necessitating frequent surgical intervention. In the nodular type, nodules are found developing in the conjunctiva, in the cornea and in the iris. In the later stages iritis is common. The deeper nodules in the cornea have a tendency to ulcerate and frequently there is found involvement of the entire uveal tract. This ends in shrunken painful globes which require enucleation. Case histories are given of thirteen patients, with chronic leprosy, confined in the Isolation Hospital of San Francisco. Nearly all of the patients show eye symptoms in greater or lesser degree, chiefly the former.

BOOK REVIEWS.

The Ophthalmic Year Book. Volume XI. Edited by Edward Jackson, M.D. Illustrated. Herrick Book and Stationery Co., Denver, Colorado, 1915.

This welcome yearly visitor needs no introduction to our readers. We know that it is an excellent digest of the ophthalmic literature, and the names of the men with whose collabora-

tion it is published warrant nothing but good work. The number of collaborators has again been increased and, as a result, the volume is thicker than usual. The text is, as in former volumes, preceded by the biographic notices concerning ophthalmologists who have died during the year. The volume is a credit to editor and collaborators alike.

NURSING IN DISEASES OF THE EYE, NOSE AND THROAT. By the Committee on Nurses of Manhattan Eye, Ear and Throat Hospital, New York City. Second edition, thoroughly revised. Illustrated. Philadelphia and London. W. B. Saunders Co. Price $1.50.

This little text book for nurses is very practical and should prove of great help to the student in nursing for whom it is written by men of experience. The difficulties which naturally arise in addressing students whose preliminary education is, probably, not of a kind to allow of a more scientific presentation, have been overcome nicely, and only what is practical has been included. The book is worthy of recommendation.

THE AMERICAN ENCYCLOPEDIA AND DICTIONARY OF OPHTHALMOLOGY. Edited by Casey A. Wood, M.D., C.M., D.C.L. Assisted by a large staff of collaborators. Fully illustrated. Vol. VII. Exophthalmus to Gyrus angularis.

This, the seventh volume of the American Encyclopedia, including the letter G, makes up about half of number of volumes it is likely finally to fill. What has been published thus far fills 5,671 pages and includes over 3,500 illustrations, of which over 100 are color plates. Thus this Encyclopedia bids fair to be larger than the French one and perhaps nearly as large as Graefe-Saemisch—both of which, however, lack the dictionary feature.

The volume before us contains as especial features an article on Exophthalmus by Halstead and Wuerdemann, one on the History of Eyeglasses and Spectacles by Emory Hill, one on Examination of the Eyes of Soldiers, Sailors, Railroad Employees, etc., by Nelson Black, and one on Glaucoma by Chance and Posey. Although these articles stand out more prominently on account of their size and the importance of their subjects, numerous smaller and equally valuable ones fill the remaining pages.

ALT.